ENVIRONMENTAL PROTECTION
OFFICE OF AIR QUALITY MANAGEMENT
Diesel-Powered Motor Vehicle Inspection and Maintenance Program

Proposed Amendments: **N.J.A.C. 7:27-14.1, 14.5, 7:27B-4.2, 4.3**

Authorized by: Robert C. Shinn Jr., Commissioner, Department of Environmental Protection, in consultation with the Division of Motor Vehicles and the Department of Transportation.

Authority: N.J.S.A. 13:1B-3(e), 13:1D-9, 26:2C-8 et seq., specifically 26:2C-8, 8.1 through 8.5, 8.11, and N.J.S.A. 39:8-61.

DEP Docket Number: 05-99-03/691

Proposal Number:

A public hearing concerning this proposal will be held at 10:00 A.M. on **May 6, 1999** at:
First Floor Hearing Room
Department of Environmental Protection
401 East State Street
Trenton, New Jersey

Submit written comments by **May 10, 1999** to:
Michael Marotta, Esq.
Attention: DEP Docket No.
Department of Environmental Protection
P.O. Box 402
Trenton, New Jersey 08625-0402

Visit our website at: www.state.nj.us/dep/aqm, where Air Quality Management rules, proposals, adoptions and SIP revisions are available, or download them electronically from the Department's Air Quality Regulations Bulletin Board. The compressed file, DPROP99.ZIP, contains WordPerfect® 5.1 and ASCII documents and is located in file area #35 (Air: Props, Adopts, & Notices). The data line number for the Bulletin Board is (609) 292-2006. (Data bit: 8; Parity: N; Stop bit: 1).

The agency proposal follows:

Summary

The Department of Environmental Protection (the Department) is proposing to amend N.J.A.C. 7:27-14 (Control and Prohibition of Air Pollution from Diesel-Powered Motor Vehicles) and N.J.A.C. 7:27B-4 (Air Test Method 4, Testing Procedures for Motor Vehicles), its rules which

include the testing procedures and requirements to be followed in the inspection of diesel-powered motor vehicles in the State's new diesel inspection and maintenance (I/M) program.

The Department is proposing these changes 1) to clarify that certain testing procedures are required only during inspections conducted by State-licensed Diesel Emission Inspection Centers (DEICs) as part of the periodic inspection program but are not required during inspections conducted by the Division of Motor Vehicles (DMV) and the State Police (roadside enforcement teams) as part of the roadside enforcement program, and 2) to correct certain other typographical inconsistencies regarding the vehicle engine size and transmission type for which the snap acceleration smoke opacity test and the stall acceleration test are appropriate.

The rules governing this program, generally, were promulgated by the Department and the DMV within the New Jersey Department of Transportation (DOT) at N.J.A.C. 7:27-14, N.J.A.C. 7:27B-4 and N.J.A.C. 13:20-26, 30, 45, 46 and 47. (See 29 N.J.R. 4108(a) and 4149(a).) The Department and the DMV modified the program rules in 1998. (See 30 N.J.R. 2476(b) and 30 N.J.R. 2262(b).)

Background:

The new diesel I/M program was established to control and reduce the release of air pollutants from diesel-powered motor vehicles. Specifically, this program is designed to reduce the excessive emission of particulate matter (PM) which results from vehicle malfunction, poor or improper maintenance and/or emission-related tampering. The primary subjects of the program are heavy-duty diesel vehicles (HDDVs) and diesel buses.

On September 15, 1997, the Department and the DMV promulgated rules establishing the new diesel I/M program pursuant to the Air Pollution Control Act (APCA), N.J.S.A. 26:2C-1 et seq., and N.J.S.A. 39:8-59 et seq., as amended by P.L. 1995, c. 157, otherwise known as the diesel statute. (See 29 N.J.R. 4108(a) and 4149(a).) Enacted on June 30, 1995, the diesel statute authorizes and directs the State to implement a program which will reduce in-use emissions from heavy-duty diesel vehicles. The diesel statute directs the Director of the DMV, in consultation with the Department and the DOT and with the approval of the Attorney General, to establish and implement a periodic inspection program and a roadside enforcement program for these diesel vehicles. The diesel statute also directs the Department, in consultation with the DMV and the DOT, to adopt rules establishing the exhaust emission test methods and standards, and the testing equipment specifications to be used in the diesel inspection program.

This new diesel I/M program improves upon New Jersey's basic diesel I/M program, which has included emissions inspections since 1971, by adding the periodic inspection and roadside enforcement components to the pre-existing self-inspection component. The periodic inspection program provides for annual inspections to be conducted at the DMV-licensed DEICs; the roadside enforcement program provides for the roadside inspection of out-of-state and unregistered diesel vehicles as well as New Jersey-registered diesel vehicles by teams composed of State Police and DMV staff. The Department has promulgated new smoke opacity tests and smoke opacity standards for all three inspection components of the program.

A more detailed description of the new diesel I/M program is provided in the April 7, 1997 proposal of the rules for this program at 29 N.J.R. 971(a) and 1264(a) and the September 15, 1997 adoption of the rules at 29 N.J.R. 4108(a) and 4149(a). A description of subsequent modifications to the program can be found at 30 N.J.R. 901(a) and 30 N.J.R. 990(a).

The first set of proposed amendments concerns distinctions between testing procedures to be followed by the DEICs and the roadside enforcement teams. The Department intended that the DEICs and the roadside enforcement teams follow identical test procedures, with certain exceptions. For one, in order to ensure that vehicles presented for inspection at DEICs are properly warmed up and their engines are at the correct operating temperature at the time of the inspection, the Department requires the DEICs to use engine oil temperature sensors and to reflect, on the printed test report, the engine oil temperature recorded by these sensors during the test. Similarly, in order to ensure that the vehicles presented for inspection at DEICs are tested at the correct engine speed, the Department requires the DEICs to use engine speed, or revolutions per minute (RPM), sensors and to reflect, on the printed test report, the RPM pattern recorded by these sensors during the test. The use of the RPM sensors confirms that the inspection was conducting using proper 1) curb idle engine speed, 2) high idle engine speed, and 3) elapsed time between curb idle and high idle. In this way, the Department can ensure proper testing of vehicles and more accurately audit the performance of the DEICs. (See N.J.A.C. 7:27B-4.3(a)2-(a)4, (b)2-(b)4 and (c)4-(c)6 and 4.15 (b)3v and vi.) Furthermore, while the specifications for the smokemeters used by the DEICs are otherwise identical to those for the smokemeters used in the roadside enforcement program, the Department established additional specifications for DEIC smokemeters to ensure that they are equipped with these engine RPM and oil temperature sensors. (See N.J.A.C. 7:27B-4.15(a) and (b).)

The roadside enforcement teams, on the other hand, determine that the subject vehicle's engine is properly warmed up by ascertaining that the vehicle has been operated under load for at least 15 minutes prior to inspection. This is consistent with SAE 1667J, the testing procedures for the snap acceleration smoke opacity test recommended by the Society of Automotive Engineers (SAE) upon which the Department's procedures for this test are based. Similarly, the roadside enforcement teams rely on the promptings of the smokemeter to have the vehicle operator accelerate the engine and subsequently release the accelerator pedal, as is also the SAE-recommended practice. The SAE, in recommending these practices, recognized them as reliable means of determining proper operation of the vehicle during the inspection.

These differing requirements for tests performed and equipment used by the DEICs and the roadside enforcement teams were clearly articulated in the rules for the new diesel inspection and maintenance program as originally promulgated on September 15, 1997. (See the Department's response to Comment 36 at 29 N.J.R. 4114 where, in discussing the requirements that DEICs use smokemeters equipped with these engine RPM and oil temperature sensors to take the engine RPM and temperature readings, the Department explained that it had determined these requirements to be necessary in order to maintain quality control within the periodic inspection program, but that these requirements are not applicable to equipment which will be used during roadside enforcement inspections which will be directly administered by the DOT.) On March 16, 1998, the Department proposed to amend N.J.A.C. 7:27B-4.3 to provide clearer, more explicit descriptions of the test procedures to be followed by both the DEICs and the roadside enforcement teams for the three

smoke opacity tests. In doing so, however, the Department inadvertently failed to retain language which makes applicable to DEICs, only, the requirement that engine oil temperature and RPMs are to be measured and recorded using smokemeter sensors designed for that purpose. This typographical error was corrected upon the adoption of these amendments. However, in the same rulemaking, the Department, through an oversight, failed at that time to correct a similar loss of distinction between the DEICs and the roadside enforcement teams in the proposed amendments to N.J.A.C. 7:27B-4.2, which addresses the general instructions for all tests conducted pursuant to provisions of the subchapter. Specifically, as a result, N.J.A.C. 7:27B-4.2(a)3 currently contains language which may suggest, contrary to explicit language set forth at 7:27B-4.3, that both roadside enforcement teams and DEICs must use an oil temperature probe to measure, confirm and record proper engine oil temperature. (See N.J.A.C. 7:27B-4.3(a)3, (a)4, (b)3, (b) 4, (c)5 and (c) 6.)

Similarly, N.J.A.C. 7:27B-4.2(a)8 suggests, contrary to explicit language set forth at N.J.A.C. 7:27B-4.3, that both roadside enforcement teams and DEICs must use an RPM sensor to measure, confirm and record proper engine speed. (See N.J.A.C. 7:27B-4.3(a)2, (a)4, (b)2, (b)4, (c)4 and (c)6.)

Finally, N.J.A.C. 7:27B-4.2(a)4 suggests that both roadside enforcement teams and DEICs are to tighten all loose pipe connections and repair all significant exhaust leaks before conducting a smoke opacity test. This clearly is not practical at a roadside inspection and the failure to clearly require this only of DEICs was unintentional.

Accordingly, the Department proposes to clarify that the above testing requirements apply only to DEICs by amending the provisions at N.J.A.C. 7:27B-4.2(a)3, (a)4 and (a)8 as set forth below.

A second set of proposed clarifying amendments concerns inadvertent typographic discrepancies regarding which diesel vehicles, based on engine size and transmission type (automatic or manual), are to receive which smoke opacity test. That is, while N.J.A.C. 7:27B-4.3(a) clearly states that the snap acceleration smoke opacity test is to be performed on "heavy-duty vehicles and diesel buses which are equipped with low or medium-speed diesel engines and manual transmissions," N.J.A.C. 7:27-14.5(a)1 and (b)1 provide that the snap acceleration smoke opacity test is to be used for a vehicle "with a low speed engine only." Similarly, while N.J.A.C. 7:27B-4.3(c) clearly states that the stall smoke opacity test is to be performed on "a vehicle with a medium or high speed diesel engine and an automatic transmission only," N.J.A.C. 7:27-14.5(a)3 and (b)3 provide that the stall smoke opacity test is to be used for a vehicle "with an automatic transmission, only" and makes no reference to the speed of the engine.

Proposed amendments to 7:27-14.1 Definitions

The Department proposes to replace the term "low speed engine" with the term "low speed diesel engine" and to amend the definition to correct the maximum governed RPM to 2,200, not 2,400.

The Department proposes to add definitions of the terms "high speed diesel engine" and "medium speed diesel engine" which are used in the proposed amendments to the subchapter.

Proposed amendments to 7:27-14.5 Test requirements

As described above, the Department proposes to clarify that the snap acceleration smoke opacity test applies to a vehicle with a low or medium speed diesel engine, only, and that the stall smoke opacity test applies to a vehicle with a medium or high speed diesel engine, and an automatic transmission, only, by amending N.J.A.C. 7:27-14.5(a)1 and 3 and (b)1 and 3.

Proposed amendments to N.J.A.C. 7:27B-4.1 Definitions

The Department proposes to delete "heavy-duty" from the term "heavy-duty diesel engine" used in the definitions of "low speed diesel engine", "medium speed diesel engine" and "high speed diesel engine" for greater simplicity of the text and to make these definitions consistent with the definitions proposed for these terms in N.J.A.C. 7:27-14.

Proposed amendments to 7:27B-4.2 General instructions for all tests

As described above, the Department proposes 1) to clarify that only a DEIC must confirm proper engine operating temperature by using an engine oil temperature sensor by amending N.J.A.C. 7:27B-4.2(a)3; 2) to clarify that only a DEIC must, before testing, tighten any loose pipe connections and repair significant exhaust leaks by amending N.J.A.C. 7:27B-4.2(a)4; and 3) to clarify that only a DEIC must use RPM sensors to determine that the subject vehicle's engine speed governor is in proper operating condition, by amending N.J.A.C. 7:27B-4.2(a)8.

Proposed amendments to 7:27B-4.3 Procedures for using a smokemeter to measure the smoke opacity of heavy-duty diesel vehicles and diesel buses

As described above, the Department proposes to clarify that the snap acceleration smoke opacity test is to be performed only on diesel vehicles equipped with low or medium-speed engines, without regard to whether the vehicle's transmission is manual or automatic, by deleting the phrase "manual transmissions" from the provisions of N.J.A.C. 7:27B-4.3(a).

Social Impact

These proposed amendments will have a positive social impact insofar as they protect the integrity of the diesel I/M program. To the extent the inadvertent ambiguities might have weakened the roadside enforcement component of this program, the State would be unable to fully achieve the social benefits of this program. That is, to the extent they facilitate the continued and proper implementation of the new diesel I/M program, these proposed amendments make a positive contribution to the air quality in New Jersey by reducing particulate matter (PM) emissions from poorly or improperly maintained diesel-powered vehicles, diesel-powered vehicles which are malfunctioning and/or diesel-powered vehicles which have been subjected to emission-related tampering. This reduction in PM will in turn have a positive health impact upon New Jersey's

population, particularly those who reside in areas with a high volume of diesel-powered motor vehicle traffic. On the other hand, to the extent the proposed amendments otherwise simply clarify that certain procedures, namely, use of engine RPM and engine oil temperature sensors and the repair of exhaust leaks, are only required of DEICs and not roadside enforcement teams, they should have no social impact. A more detailed description of the social impact of the new diesel I/M program is provided in the April 7, 1997 proposal of the rules for this program at 29 N.J.R. 971(a) and 1264(a).

Economic Impact

These proposed amendments should have no economic impact insofar as they simply clarify that certain procedures, namely, use of engine oil temperature and RPM sensors, are only required of DEICs and not roadside enforcement teams. Similarly, there should be no economic impact from clarifying that only DEICs, and not roadside enforcement teams, are required to repair exhaust leaks.

On the other hand, to the extent that these proposed amendments further the efforts of the new diesel I/M program, which was designed to reduce PM emissions from diesel vehicles, they will have a positive economic impact. That is, by furthering the State's goals of the new diesel I/M program, these proposed amendments would result in improved air quality, thereby reducing the substantial costs to the State and its citizens that are associated with air pollution, such as health care costs and the cost of damage to buildings, materials, crops and vegetation. The Department also anticipates an increase in fuel economy for vehicles failing the smoke emission test and subsequently being repaired to come into compliance. This fuel economy increase will have a positive economic impact on the regulated industry. A more detailed description of the economic impact of the new diesel I/M program generally is provided in the April 7, 1997 proposal of the rules for this program at 29 N.J.R. 971(a) and 1264(a).

Environmental Impact

The proposed amendments will have a positive impact on the environment. As is discussed in the Social and Economic Impact statements, above, these proposed amendments serve only to bring the text of the Department's rules more clearly in line with both the intended program designs and the actual practices followed by the roadside enforcement teams. To the extent that these proposed amendments further the efforts of the new diesel I/M program, which was designed to reduce PM emissions from diesel vehicles, they will have a positive environmental impact. PM can have damaging effects on plant life and nonbiological materials such as buildings in urban areas. A more detailed description of the environmental impact of the new diesel I/M program is provided in the April 7, 1997 proposal of the rules for this program at 29 N.J.R. 971(a) and 1264(a).

Jobs Impact

As is discussed in the Social, Economic and Environmental Impact statements, above, these proposed amendments serve only to bring the Department's rules more clearly in line with both the

intended program design and the actual practices followed by the roadside enforcement teams. Accordingly, the Department does not expect the regulated community to incur any costs in complying with the rules as modified by these proposed amendments. Thus the diesel inspection and maintenance program rules, as modified by the proposed amendments, should not have any impact on employment in New Jersey.

Federal Standards Statement

Executive Order No. 27 (1994) and P.L. 1995, c. 65 require State agencies which adopt, readopt or amend State regulations that exceed any Federal standards or requirements to include in the rulemaking document a comparison with Federal law. The proposed amendments to N.J.A.C. 7:27-14 and N.J.A.C. 7:27B-4 are not promulgated under the authority of, or in order to implement, comply with or participate in any program established under Federal law or under a State statute that incorporates or refers to Federal law, Federal standards or Federal requirements. Moreover, there is no comparable Federal standard exceeded by this rulemaking and no federal regulatory scheme which might be perceived to be duplicated or overlapped by this rulemaking. Accordingly, Executive Order No. 27 (1994) and P.L. 1995, c. 65 do not require a Federal standards analysis.

Agriculture Industry Impact

Pursuant to P.L. 1998, c. 48, adopted on July 2, 1998, the Department has evaluated this rulemaking to determine the nature and extent of the proposed amendments' impact on the agriculture industry. The proposed amendments, regarding the inspection and maintenance of heavy-duty diesel vehicles, will have no impact upon the agriculture industry.

Regulatory Flexibility Statement

In accordance with the New Jersey Regulatory Flexibility Act, N.J.S.A. 52:14B-16 et seq., the Department has determined that the proposed amendments would not impose additional compliance, reporting or recordkeeping requirements on small businesses (as defined in the Regulatory Flexibility Act), as the amendments do no more than clarify existing requirements of the program. That is, these proposed changes 1) clarify that certain testing procedures are not required during inspections conducted by the Division of Motor Vehicles (DMV) and the State Police (roadside enforcement teams) as part of the roadside enforcement program, and 2) correct certain other typographical inconsistencies regarding the vehicle engine size and transmission type for which the snap acceleration smoke opacity test and the stall acceleration test are appropriate.

Full text of the proposed amendments follows (additions indicated in boldface **thus**; deletions indicated in brackets [thus]):

7:27-14.1 Definitions

. . .

"High speed diesel engine" means any diesel engine with a maximum governed engine speed over 2,800 RPM.

. . .

"Low speed **diesel** engine" means **[**an**]** **any diesel** engine with a maximum governed **[**RPM**]** **engine speed** of no more than **[**2,400**]** **2,200 RPM**.

"Medium speed diesel engine" means any diesel engine with a governed engine speed of 2,201 RPM to 2,800 RPM.

. . .

7:27-14.5 Test requirements

(a) A person testing a diesel-powered motor vehicle as part of the roadside enforcement program established pursuant to N.J.S.A. 39:8-64 and N.J.A.C. 13:20-46 shall use one or more of the following tests, as designated by the Director of the Division of Motor Vehicles in consultation with the Department and the New Jersey Department of Transportation, and with the approval of the Attorney General:

1. The snap acceleration smoke opacity test, for a vehicle with a low **or a medium** speed **diesel** engine, only, as described at N.J.A.C. 7:27B-4.3(a);

2. (No change.)

3. The stall smoke opacity test, for a vehicle with **a medium or high speed diesel engine and** an automatic transmission, only, as described at N.J.A.C. 7:27B-4.3(c); or

4. (No change.)

(b) A person testing a heavy-duty diesel vehicle as part of the periodic inspection program established pursuant to N.J.S.A. 39:8-64 and N.J.A.C. 13:20-26.17 shall use one of the following tests:

1. The snap acceleration smoke opacity test, for a vehicle with a low **or a medium** speed **diesel** engine, only, as described at N.J.A.C. 7:27B-4.3(a);

2. (No change.)

3. The stall smoke opacity test, for a vehicle with **a medium or high speed diesel engine and** an automatic transmission, only, as described at N.J.A.C. 7:27B-4.3(c); or

4. (No change.)

(c) - (e) (No change.)

7:27B-4.1 Definitions

. . .

"High speed diesel engine" means any **[**heavy-duty**]** diesel engine with a maximum governed engine speed over 2,800 RPM.

. . .

“Low speed diesel engine” means any **[**heavy-duty**]** diesel engine with a maximum governed engine speed of no more than 2,200 RPM.

. . .

“Medium speed diesel engine” means any **[**heavy-duty**]** diesel engine with a governed engine speed of 2,201 RPM to 2,800 RPM.

. . .

7:27B-4.2 General instructions for all tests

(a) The general procedures which must be carried out in order for an emissions test conducted pursuant to any provision of this subchapter to be valid are as follows:

1. - 2. (No change.)

3. When testing a heavy-duty diesel vehicle, bring the engine to normal operating temperature by operating the vehicle on a highway or a chassis dynamometer with a road load for a minimum of 15 minutes. [Confirm] **For testing at a DEIC, only, confirm** proper engine operating temperature by inserting an oil temperature probe through the oil dipstick tube into the crankcase oil, so that the oil temperature as measured during the test will be recorded as part of the analyzer printout at the conclusion of the test. Oil temperature shall be at least 70 degrees Celsius (160

degrees Fahrenheit), and water temperature shall be at least 82 degrees Celsius (180 degrees Fahrenheit) but not overheating.

4. Examine the vehicle's exhaust system for integrity. [Tighten] **For testing at a DEIC, only, tighten** all loose pipe connections and repair all significant exhaust leaks before performing a test;

5. - 7. (No change.)

8. Determine that the engine speed governor is in proper operating condition **[**as follows**] . For DEICs only, make this determination as follows** : operate the engine with the transmission in neutral and the clutch disengaged. Gradually increase the engine speed from curb idle to high idle while observing **[**a tachometer**] an RPM sensor** connected to the engine. The engine speed should not exceed high idle as specified by the engine manufacturer with the accelerator pedal fully depressed. If the engine speed continues increasing beyond the manufacturer's rated high idle, immediately release the accelerator pedal. If the engine speed increases uncontrollably, immediately release the accelerator pedal and shut off the engine's fuel supply. Discontinue emission testing of any vehicle with dysfunctional or out-of-specification engine speed governors. Do not resume testing unless and until speed governor repairs are made;

9. - 12. (No change.)

(b) - (d) (No change.)

7:27B-4.3 Procedures for using a smokemeter to measure the smoke opacity of heavy-duty diesel vehicles and diesel buses.

(a) The testing procedures for the snap acceleration smoke opacity test, required pursuant to N.J.A.C. 7:27-14.5, shall be performed on heavy-duty diesel vehicles and diesel buses which are equipped with low or medium-speed diesel engines **[**and manual transmissions**]** as follows:

1. - 14. (No change)

(b) - (e) (No change.)